Rhodora

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Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 19. July, 1917. No. 223.

A NEW RUDBECKIA FROM INDIANA.

S. F. Blake.

In an interesting collection of Indiana plants recently sent to the Gray Herbarium by Mr. Charles C. Deam were several specimens of a Cone-flower of the *Rudbeckia speciosa* group which Mr. Deam suspected might prove to be new. The plant, although rather closely allied to *R. speciosa* Wenderoth and its var. *Sullivantii* (Boynton & Beadle) Robinson — the latter of which was collected by Mr. Deam in the same general region — proves in fact to be undescribed, and may be called, in recognition of the careful and extensive collecting done by its discoverer in various parts of the United States and in Central America,

Rudbeckia **Deamii**, sp. nov. Perennis stolonifera stolonibus brevibus apice foliatis. Caulis simplex subtenuis erectus ad 6 dm. altus striatus dense hirsutus pilis albidis retrorsis ad apicem caulis adscendentibus. Folia stolonum ovata vel ovali-ovata acuta basi subabrupte contracta deinde acute cuneata tenuia membranacea triplinervia vel subquintuplinervia supra subdense sed vix aspere hirsuto-pilosa pilis adscendentibus vel subappressis basi vix dilatatis subtus paullulo pallidiora similiter pubescentia crenato-serrata dentibus ca. 6-jugis depressis mucronulatis 7–10(–13.5) cm. longa 3.5–5.2 (–6) cm. lata, in petiolis retrorse hirsutis vix marginatis 5–9 cm. longis; folia caulina 10–11 (supremis 1–2 bracteiformibus lanceolatis integris 2–4 cm. longis exclusis), 2–3 infima eis stolonum similia; media et superiora ovata acuminata basi cuneata sessilia subamplectentia 7.5–15.5 cm. longa 2.8–5 cm. lata. Capitula 1–2(–4) caulem et ramum axillarem terminantia 4.5–6 cm. lata; pedunculi sulcati hispido-pilosi pilis adscendentibus vel subappressis 9.5–13.5 cm. longi; discus late conicus obtusus 1.1 cm. altus 1.3 cm. crassus. Involucri

2(–3)-seriati reflexi 1.2–1.5 cm. longi phyllaria extima herbacea inaequalia lanceolata acuta mucronulata ciliata et utroque hispido-pilosa 2.5–4 mm. lata; interiora 1(–2)-seriata anguste lanceolata acuminata basi paullum indurata et pallida ceterum herbacea ciliata et extus breviter hispido-pilosa intus glabra vel subglabra extimis duplo breviora. Radii 12–14 lineari-cuneati valde bidentati supra aurantiaco-flavi (colore basi vix saturatiore) subtus dorso appresso-pilosuli (1.6–)2.2–2.5 cm. longi (4–)5–6 mm. lati; corollae disci fusco-purpureae glabrae 4 mm. longae (tubo indistincto 0.7 mm., dentibus lanceolato-triangularibus 0.8 mm.). Paleae acutae ad apicem subscariosae et erosulae glabrae vel in carina sparsissime pilosae 5 mm. longae. Achaenia nigra glabra quadrangularia 2.5 mm. longa (pappo coroniforme brevissimo paullum eroso in angulis achaenii non producto incluso). Antherae basi valde sagittatae. Styli rami apice subtruncati hispidi.

Stem simple, slender, erect, about 6 dm. high, densely retrorse-hirsute, appressed-hairy above, with short leafy off-shoots. Leaves of the stolons ovate or oval-ovate, acute, at base rather abruptly contracted, then cuneately narrowed into the petiole, thin, tripli- or quintuplinerved, crenate-serrate (teeth about 6 pairs, depressed, mucronulate), hirsute-pilose both sides with ascending or subappressed hairs, slightly paler beneath, 7–10 cm. long, 3.5–5.2 cm. wide; stem-leaves 10–11 (with 1–2 additional lanceolate entire bracts 2–4 cm. long above), the 2–3 lowest similar to those of the stolons, the others ovate, acuminate, cuneate to base, subamplexicaul, 7.5–15.5 cm. long, 2.8–5 cm. wide. Heads 1–2(–4), terminating the stem and an axillary branch, 4.5–6 cm. wide; peduncles sulcate, hispid-pilose with ascending or subappressed hairs, 9.5–13.5 cm. long; disk broadly conic, obtuse, 1.1 cm. high, 1.3 cm. thick. Involucre 2(–3)-seriate, reflexed, 1.2–1.5 cm. high, the outermost phyllaries unequal, herbaceous, lanceolate, mucronulate, acute, ciliate, hispid-pilose both sides, 2.5–4 mm. wide; the inner 1(–2)-seriate, narrowly lanceolate, acuminate, at base slightly indurated and pale, otherwise herbaceous, ciliate, on the outer face shortly hispid-pilose, on the inner glabrous or subglabrous, half as long as the outer phyllaries. Rays 12–14, linear-cuneate, strongly bidentate, orange-yellow scarcely deeper at base, on back appressed-pilosulous, 2.5 cm. long, 5–6 mm. wide; corollas of disk deep purple, glabrous, 4 mm. long (the indistinct tube 0.7 mm., the lance-triangular teeth 0.8 mm. long). Pales acute, at apex subscarious and finely erose, more or less colorate, glabrous or with a few hairs along the keel, 5 mm. long. Achenes black, glabrous, quadrangular, 2.5 mm. long (including the very short coroniform slightly erose pappus, which is not produced over the angles). Anthers strongly sagittate. Style-branches subtruncate, hispid at apex.

INDIANA: a single colony in dry, black, friable soil along Wild Cat Creek, Carroll Co., 2 Sept., 1916, *Charles C. Deam* 21,674 (TYPE in Gray Herb.).

Most nearly related to *R. speciosa* Wenderoth, from which it differs in its dense retrorse pubescence, its much broader and thinner stem-leaves (practically uniform in size and shape with these of the stolons, instead of much narrower and longer as in *R. speciosa*), and its outer phyllaries which are rather densely pubescent on the inner as well as outer face. Also close to *R. speciosa* var. *Sullivantii* (Boynton & Beadle) Robinson, which however has a sparse harsh pubescence if any on the stem, thick leaves, thick blunt phyllaries scarcely pubescent on the upper side, and always apically ciliate pales.

Gray Herbarium.

COLOR FORMS OF IMPATIENS BIFLORA.

C. A. Weatherby.

The common jewel-weed produces an unusually interesting series of color variations. In their range of hues they are very similar to those of the garden "nasturtium" (*Tropaeolum majus* L.) and, were it worth while, could doubtless be made to develop, under cultivation, as many shades and gradations of color. Indeed, Professor Fernald tells me of one locality where, possibly through the juxtaposition and crossing of several forms, something of the sort has already happened in the wild. The forms known to the writer and described below appear, however, to represent the main lines of variation. The flowers, in the dried specimens cited, have in most cases lost all their color, but the collectors' notes give the needed information.

Impatiens biflora Walt. Perianth orange, with more or less numerous, usually crimson spots. The typical and common form.

Forma **citrina**, f. nov. Perianthiis flavis modo *Citri Limonum* fructus, coccineo-maculatis. Perianth lemon-yellow, with crimson spots. Connecticut: Moist thicket, Thompson, Sept. 7, 1908, *Bissell & Weatherby* (type, in Gray Herb.).

Forma **albiflora** (Rand & Redfield), comb. nov. *I. fulva*, f. *albiflora* Rand & Redfield, Fl. Mt. Desert 88 (1894). "Flowers white or cream-color," the spots often paler than in the typical form, then pink or brownish red. Maine: Southwest Harbor, *Rand;* Farmington, Aug. 15, 1894, *Fernald,* "white with pink spots." Massachusetts:

Edge of pool, Billerica, Aug. 12, 1911, *Weatherby*, "petals white, the spur cream-color"; Eat-fire Spring, Nantucket, Aug., 1896, *L. L. Dame*, "flowers cream-color." MINNESOTA: Tower, Aug., 1889, *E. J. Hill*, "nearly white, spotted with red." Britton (Cat. Pl. N. J. 74 (1889)) reports "a form with white flowers" at Toms River, N. J., on the authority of Dr. Knieskern.

I have not seen a pure albino form nor have I found an altogether certain, first-hand report of one. In the palest flowers seen by me, at least the saccate sepal is cream-color, the color being strongest in the spur. I am therefore leaving f. *albiflora* for the present, as defined by Rand & Redfield, to cover both cream-colored and reported white flowers. The pure albino, if it occurs, will probably prove to be a distinct strain, making, with f. *citrina* and the cream-colored element of f. *albiflora*, a series — pure yellow, pale yellow, white — such as is known to exist in *Gratiola aurea*.[1] Mr. Rand writes me as follows in regard to the type of f. *albiflora:*

"I fear that the 'forma *albiflora*' mentioned in the Mt. Desert Flora was in reality the form with cream-colored flowers. I know just where the plant grew that I had in mind, and it may grow there yet. Plants with flowers of a purer white have been observed, but I. . .did not regard them as distinct."

Forma *albiflora*, then, was founded on a plant with cream-colored flowers and the name, though inappropriate, will have to be retained for the cream-colored form, should the two strains prove distinct.

Forma **Peasei** A. H. Moore, f. nov.[2] Perianthiis roseis, rubromaculatis. Perianth pink, spotted with deeper red. MAINE: Hartford, 1886, *Parlin*. NEW HAMPSHIRE: Damp roadside, Whitefield, Sept. 2, 1913, *A. S. Pease*, no. 14,506 (TYPE, in Herb. N. E. Bot. Club), "flowers pink"; Jefferson, Aug. 26, 1901, *Edith Cook;* Aug. 26, 1907, *A. S. Pease*, no. 10,741; Jackson, Aug. 22, 1909, *Harold St. John*, "roseate form." NEW YORK: Downsville, Delaware Co., 1891, *Miss C. G. Orton*. A specimen from Oxford, Connecticut, Sept. 10, 1903, *E. B. Harger*, no. 4344, described by the collector as having flowers "pale flesh-color to salmon-pink," may represent another strain.

In all of the above forms the spots are present, as in the typical

[1] See RHODORA, ix. 123 (1907). Cream-colored or pale yellow variants of several yellow flowers are known to occur. *Impatiens pallida, Potentilla pumila, Hypericum punctatum*, and *Rudbeckia hirta* are cases in point. In *I. pallida* an albino form has been reported by Clute.

[2] Named for Professor A. S. Pease, as a small recognition of his untiring work in the study of the flora of Coös County, New Hampshire.

form. According to collectors' notes and what I have seen myself, they vary somewhat in color, from crimson to pink and brownish red, and very much in number. In some individuals they are few and scattered and in others so numerous as to coalesce in an irregular crimson spot on the lower spreading petal. But in all these forms they exist without essential change of hue, quite independently of the variations of the body-color of the perianth. In a fifth form, however, the perianth is orange, as in the typical form, but the spots are entirely absent. Rough tests of the pigment of these spotless flowers gave different results from the same tests applied to flowers of two spotted forms, of which fresh material was available at the time. This form may be called

Forma **immaculata**, f. nov. Perianthiis aurantiacis, sine maculis. Perianth orange, without spots. MAINE: Springy woods, St. Francis, Aug. 16, 1893, *Fernald*, no. 21a (TYPE, in Herb. Gray); Bar Harbor, Aug. 31 (no year given), *Kate Furbish*. VERMONT: Mt. Mansfield, Aug., 1877, *Faxon*. MINNESOTA: Lac qui Parle (no date or collector), "without spots."

Certain facts about these forms may be worth noting. As might be expected in a species producing cleistogamous flowers, they show abundant ability to maintain themselves. Forma *Peasei* was collected at the same station in Jefferson, New Hampshire, in 1901 and 1907. Forma *albiflora* at the Billerica station, where conditions are unfavorable for its spreading, was present in about the same quantity in 1914 as when I first saw it there in 1911. Forma *citrina* at Thompson, where conditions were more favorable, increased considerably between 1908 and 1914, though the station is now likely to be exterminated by the building of a state road. That is, these forms are apparently not recurrent but unstable variations, like, for instance, *Viola pedata*, f. *rosea*,[1] but, once established, tend to remain as fixed and genetically constant lines.

At the Billerica and Thompson stations the forms occur in pure colonies, associated with, even mingled with, the typical form, but not grading into it nor into any of the other variant forms. That is, at Billerica, all the variant plants are f. *albiflora*, at Thompson, practically all f. *citrina*. At the latter place, out of scores of plants, two exceptions were noted in which the color was somewhat intermediate between f. *citrina* and typical *I. biflora*. These, however,

[1] See RHODORA, xiv. 22 (1912).

were very probably due to crossing. Many bees were at work on the flowers and appeared to visit both forms indiscriminately.[1]

The colors developed in these variants occur normally in other species of the genus. *I. racemosa* DC., *I. Dalzellii* H. f. & T., *I. repens* Moore, etc. are yellow; *I. porrecta* Wall., *I. laevigata* Wall., *I. longipes* H. f. & T. and others are cream-color; *I. capensis* Thunb., *I. modesta* Wight, and *I. diversifolia* Wall., pink. We have here, as in *Gratiola aurea*, a series of variants correlated with ancestral tendencies in the genus, and perhaps arising from the loss of elements present in the typical form.

Water-color drawings of formae *albiflora* and *citrina* have been kindly made for me by Miss Una L. Foster and are deposited in the Gray Herbarium. It is hoped to complete the series of drawings as opportunity offers to get fresh material.

EAST HARTFORD, CONNECTICUT.

[1] Both honey-bees and a small species of humble-bee visited the flowers. The honey-bees invariably plunged into them in the fashion needed for effecting pollination, pushing their way into the sac until only their "business ends" were visible. The humble-bees, on the other hand, alighted in the same position as the honey-bees, but instantly and with entire unanimity, turned over, hung upside down beneath the flower and tried to pierce the spur and extract the nectar from the outside. So far as I could judge, the swaying of the flower and the elasticity of the spur, frequently defeated this attempt. Some insect rifles the nectaries of *Habenaria blephariglottis* after the same fashion and with better success. In some dozens of spikes of this species which I examined last summer, nearly all the spurs were punctured, but I could not catch the burglar at work.

ADDITIONS TO THE FLORA OF CONNECTICUT.

(*Continued from page 110.*)

AGROSTIS ALBA L. The teratological form known as *A. sylvatica* L. is plentiful at one locality in Stratford (Eames).

A. ALBA L., var. ARISTATA Gray. Seymour (Harger). Occasional in the southwestern part of the state where, however, it constantly intergrades with the typical form.

A. PERENNANS (Walt.) Tuckerm. The weak or decumbent form with looser panicles and lax blades, which has been separated as *A. Schweinitzii* Torr. is occasional in moist woods throughout.

A. CANINA L. Franklin (R. W. Woodward). In the Catalogue not reported east of the Connecticut valley. A peculiar autumnal form producing tufts of leaves from the nodes occurs at Sharon (Bissell, R. W. Woodward and Weatherby, RHODORA, xiii. 30).

† APERA SPICA-VENTI (L.) Beauv. Roadside, Bridgeport (Eames). Adventive from Europe.

CINNA LATIFOLIA (Trev.) Griseb. Pistapaug Mt., Durham (Bissell). Previously known only from the northwestern part of the state.

† AVENA FATUA L. Two or three clumps in newly-seeded grass-land, East Windsor (Bissell), Bridgeport (Eames).

† A. PUBESCENS Huds. Plentiful at one station, Woodbury (Harger). Fugitive or adventive from Europe.

SPARTINA MICHAUXIANA Hitchc. South Windsor (Bissell), New Hartford and Newtown (A. E. Blewitt). Extensions of range northward.

PHRAGMITES COMMUNIS Trin. Oxford (Harger).

* ERAGROSTIS PECTINACEA (Michx.) Steud., var. SPECTABILIS Gray. Sandy wastes on the coast: Bridgeport (C. K. Averill, Eames). Probably not rare.

MELICA STRIATA (Michx.) Hitchc. Winchester (A. E. Blewitt).

BRIZA MEDIA L. Old Lyme (A. E. Blewitt).

CYNOSURUS CRISTATUS L. Hartford (J. P. Brace, 1861; specimen in Herb. Williams College: RHODORA, xvi. 87). Well established in grass-land: Branford and Fairfield, not rare in newly seeded lawns, whence it readily spreads (Eames).

* GLYCERIA FERNALDII (Hitchc.) St. John. RHODORA, xix. 75 (1917). *G. pallida* (Torr.) Trin., var. *Fernaldii* Hitchc. RHODORA,

viii. 211 (1906). Guilford (W. R. Dudley; specimen in Herb. Yale University), East Hartford (Weatherby).

Puccinellia fasciculata (Torr.) Bickn. *P. Borreri* (Bab.) Hitchc. Along the coast: rare eastward, becoming occasional westward.

P. distans (L.) Parl. Rare. Sea beaches and borders of salt marshes: East Haven (Harger), Orange (Bissell), Bridgeport (Eames).

P. paupercula (Holm) Fernald & Weatherby, var. alaskana (Scribn. & Merr.) Fernald & Weatherby. Rhodora, xviii. 18 (1916). *P. angustata* Rand & Redfield, not *Poa angustata* R. Br. Rare. Shore of Blackhall River, Old Lyme (Graves).

The genus *Puccinellia* is here treated according to the revision by Fernald & Weatherby (Rhodora, xviii. 1–22), much of the material referred in the Catalogue to *P. distans* being here included under *P. fasciculata* (*P. Borreri* of the Catalogue).

Our species as recognized here may be distinguished by the following key (adapted from Fernald & Weatherby):—

A. Lower branches of the comparatively short panicle (0.2–1.6 dm. long) densely flowered nearly to the base or at least below the middle; lemmas thick and coriaceous, without a broad hyaline tip; the midnerve reaching the apex of the lemma, often excurrent as a very short mucro ..... *P. fasciculata*

A. Lower branches of the panicle floriferous chiefly above the middle; lemmas thin and membranaceous in texture, or at least with a broad hyaline tip; the midnerve not excurrent. B.

B. Lemmas erose-ciliolate or serrulate under a lens..... *P. distans*

B. Lemmas essentially entire..... *P. paupercula*, var. *alaskana*

* Festuca rubra, var. subvillosa Mert. & Koch. Dry, rather barren hillside pastures and in a lawn: Franklin (R. W. Woodward, Rhodora, xiii. 70).

† Festuca ovina L., var. duriuscula (L.) Koch. Established in grass-land about an old house at Branford (Eames), East Haven and Southington (Andrews).

Bromus hordeaceus L. Grass-land and about lawns in Bridgeport and Fairfield (Eames).

† B. hordeaceus L., var. leptostachys (Pers.) Beck. Bridgeport and Fairfield, growing with the species in about equal numbers. Apparently introduced in grass-seed (Eames).

B. commutatus L. New London (Graves), New Haven (Harger), Waterbury and Woodbury (A. E. Blewitt). Occasional in southwestern Connecticut (Eames).

† B. arvensis L. Well established in several dry fields, roadsides and wastes: Bridgeport (Eames). Introduced from Europe.

† B. JAPONICUS Thunb. Naugatuck (A. E. Blewitt). Fugitive from Eurasia.

B. INCANUS (Shear) Hitchc. Willimantic (G. E. Nichols), Colchester, Southbury and Oxford (Harger), Windsor (Weatherby), Waterbury (A. E. Blewitt).

B. INERMIS Leyss. Bridgeport (Eames).

† B. INERMIS Leyss., var. ARISTATUS Schur. Winchester (A. E. Blewitt), Bridgeport (Eames).

† B. MARGINATUS Nees. Waste ground, Naugatuck (A. E. Blewitt). Fugitive from the northwestern United States.

LOLIUM MULTIFLORUM Lam. Bridgeport (Eames).

† L. MULTIFLORUM Lam., var. DIMINUTUM Mutel, Fl. France, iv. 139 (1837). *L. Boucheanum* Kunth. Fields and roadsides: East Haven (Bissell), Bridgeport (Eames), Greenwich (Bissell & Weatherby). This has been confused with *L. perenne*. Forms intermediate between this and the typical form occur at Fairfield and Bridgeport (Eames).

The above forms are difficult to distinguish in herbarium material by any clear characters, but are kept apart as sub-species or even as species by practically all recent European authors on the ground that one is annual and the other perennial. The specimens cited under the variety, except that from Greenwich, were referred to *L. perenne* in the Catalogue.

The following key may help to distinguish these plants:—

A. Unexpanded leaves folded; rachis usually smooth except on the angles; glumes of the upper spikelets exceeding the contiguous floret, usually more than half the length of the spikelet.....*L. perenne*
A. Unexpanded leaves rolled in from each margin toward the mid-vein; rachis usually roughened; glumes of the upper spikelets not exceeding the contiguous spikelet. B.
B. Annual; spikelets 10–20-flowered; glumes of the lowest spikelets often exceeding the contiguous floret.....*L. multiflorum*
B. Perennial; spikelets 5–8(9)-flowered; none of the glumes exceeding the contiguous floret.....*L. multiflorum*, var. *diminutum*

† L. TEMULENTUM L., var. LEPTOCHAETON A. Br. Associated with the typical form, Bridgeport (Eames).

† HORDEUM TRIFURCATUM Jacq. Rare. Waste ground and fencerows: Berlin and Southington (Andrews).

† H. CAPUT-MEDUSAE (L.) Cosson. Formerly abundant along a roadside at Bridgeport, but the station has since been destroyed (Eames). Fugitive from Europe.

† H. MURINUM L. Wall Barley. Way Bent. Waste ground:

Naugatuck (A. E. Blewitt, Rhodora, xiv, 163). Fugitive from Europe.

* Elymus halophilus Bickn. Occasional or frequent along the coast in various moist or dry situations (Eames).

E. australis Scribn. & Ball. Thompson (Weatherby). Previously reported only from New Haven.

Eleocharis tuberculosa (Michx.) R. & S. Killingworth (Weatherby), Ellington (Harger), South Windsor (C. W. Vibert & Weatherby). Extension of range northwestwardly.

* Scirpus Smithii Gray, var. setosus Fernald. Wet alluvial soil, Voluntown (Bissell, Rhodora, xiii. 30).

S. Torreyi Olney. South Windsor (C. W. Vibert), Waterbury (A. E. Blewitt). In the Catalogue reported only from Lyme.

* S. occidentalis (Watson) Chase. Borders of ponds and slow streams: Hartford (Chas. Wright; specimen in Herb. New England Bot. Club), Goshen (Bissell & Weatherby), Sharon and Salisbury (Eames & C. C. Godfrey, Rhodora, xvi. 19). At the Goshen station occur both forms mentioned by Mrs. Chase in her description.

* S. rubrotinctus Fernald, var. confertus Fernald. Wet meadows: Southington (Bissell, Rhodora, xiii. 55), Waterbury and Barkhamsted (A. E. Blewitt).

S. atrovirens Muhl. Occasional in western Connecticut.

* S. Peckii Britton. Low, moist meadows: Barkhamsted and Winchester (A. E. Blewitt, Rhodora, xv. 98).

S. pedicellatus Fernald, var. pullus Fernald. Bank of Farmington River at New Hartford (A. E. Blewitt).

* S. Longii Fernald. Rhodora, xiii. 6 (1911). Borders of sloughs in sand-plain: South Windsor (C. W. Vibert).

Rynchospora fusca (L.) Ait. f. Killingworth (W. R. Dudley), Haddam (F. W. Hall), South Windsor (Weatherby), Norfolk (J. P. Brace; specimen in Herb. Williams College: Rhodora, xvi. 86). The last station a northwesterly extension of range.

R. capillacea Torr. Open, grassy pond-margin, Salisbury (Mrs. C. S. Phelps, Rhodora, xiii. 30).

* C. scoparia Schkuhr, var. subturbinata Fernald & Wiegand. Rhodora, xiv. 116 (1912). Dry or damp sandy soil: New London and Franklin (Graves). The perigynia in these specimens are shorter than is usual in *C. scoparia*.

C. cristata Schwein. North Canaan (A. E. Blewitt), Greenwich

(Bissell & Weatherby), Bridgeport (Eames). In the Catalogue not reported south of Huntington.

C. ALBOLUTESCENS Schwein. South Windsor (A. E. Blewitt), Bridgeport and Fairfield (Eames). In the Catalogue reported only from New London and Tolland Counties.

* C. STRAMINEA Willd., var. ECHINODES Fernald. Rich, open ground, Beacon Falls (A. E. Blewitt).

C. BICKNELLII Britton. Apparently occasional throughout the state, but usually in small quantity at any place.

* C. FESTUCACEA Schkuhr. Rare. Dry fields: Southington (Andrews), Thomaston and Waterbury (A. E. Blewitt).

C. BEBBII Olney. Canaan (R. W. Woodward), Sharon (H. S. Clark), New Fairfield (Harger) North Canaan, Newtown, and Brookfield (A. E. Blewitt), Greenwich (Bissell & Weatherby). In the Catalogue reported only from Salisbury.

C. BRUNNESCENS Poir. Waterbury (A. E. Blewitt), Stafford (A. W. Driggs). Not previously reported east of the Connecticut River.

C. DEWEYANA Schwein. Durham (Weatherby, Eames & C. C. Godfrey), Guilford (Eames & C. C. Godfrey). An extension of range southeastward.

C. TRISPERMA Dewey, var. BILLINGSII Knight. Much more common than was supposed at the time of publication of the Catalogue. It is a characteristic plant of cold sphagnum bogs where it takes the place of the typical form, which prefers swampy, but less sphagnous woods. Occasionally, however, the two grow together, showing that the variety is not merely an ecological state.

† C. MURICATA L. Waste ground, Bridgeport (Eames). Introduced from Europe.

C. TENELLA Schkuhr. Waterbury and Danbury (A. E. Blewitt).

* C. ALOPECOIDEA Tuckerm. Border of swale, North Canaan (Harger).

C. DIANDRA Schrank. Open swamps: Suffield and Sharon (Harger), Granby (Weatherby). Previously reported only from Salisbury.

C. DIANDRA Schrank, var. RAMOSA (Boott) Fernald. Abundant in a boggy pasture, North Canaan (A. E. Blewitt). Previously reported only from Salisbury.

* C. LAEVIVAGINATA (Kükenth.) Mackenzie in Britton & Brown, Ill. Fl. Ed. 2, i. 371 (1913). Open marshes and meadows: "Connecticut" (Chas. Wright, 1878, the exact locality uncertain), Durham

and Guilford (Eames & C. C. Godfrey), Cromwell and Salisbury (Weatherby), Sharon (Harger), Danbury (A. E. Blewitt) and frequent or locally common in southwestern Connecticut. An Alleghenian species closely related to, and previously confounded with, *C. stipata*, from which it differs in having the hyaline band of the sheaths smooth, not puckered, and with a conspicuous cartilaginous apex, which is yellow after drying, and in its longer perigynia with beak equalling or longer than the body.

C. AQUATILIS Wahlenb. Middlebury (Harger).

C. STRICTA Lam., var. CURTISSIMA Peck. Middletown (Joseph Barratt; specimen in Herb. Wesleyan University).

C. STRICTA Lam., var. DECORA Bailey. Waterbury (A. E. Blewitt). An extension of range westward.

C. POLYGAMA Schkuhr. Waterbury (H. J. Bassett, 1862), Fairfield (Eames).

* C. BUSHII Mackenzie. Bull. Torr. Bot. Club, xxxvii. 241 (1910). Rare. Dry fields: Milford and Bridgeport (Eames).

C. UMBELLATA Schkuhr. Common or frequent over most of the state in dry fields or open woods.

C. UMBELLATA Schkuhr, var. TONSA Fernald. Old Lyme (Bissell & Weatherby), Middletown (Weatherby). In the Catalogue reported from a single station in North Stonington.

C. UMBELLATA Schkuhr, var. BREVIROSTRIS Boott. Ledyard (Graves), Old Lyme (Bissell & Weatherby), Franklin, New Haven and "towns west" (R. W. Woodward, RHODORA, xiii. 68; xv. 95), Roxbury (Weatherby). In the Catalogue reported only from Cheshire.

* C. NOVAE-ANGLIAE Schwein. Rocky hillside woods, Norfolk (Bissell & R. W. Woodward, RHODORA, xiii. 30).

C. LIMOSA L. Suffield (G. E. Nichols).

C. PTYCHOCARPA Steud. Guilford (W. R. Dudley; specimen in Herb. Yale University). Previously reported only from Waterford.

C. LAXIFLORA Lam., var. GRACILLIMA Boott. Farmington (Chas. Wright; specimen in Herb. New England Bot. Club). In the Catalogue reported only from western Connecticut.

C. LEPTONERVIA Fernald. RHODORA, xiv. 214 (1914). *C. laxiflora* Lam., var. *leptonervia* Fernald. Cheshire and Waterbury (A. E. Blewitt).

C. HITCHCOCKIANA Dewey. Cheshire and Woodbury (A. E.

Blewitt), Hartland (Bissell & Weatherby). Previously reported only from the trap ridges of central Connecticut.

C. GLAUCODEA Tuckerm. Hamden (A. E. Blewitt), Guilford (Eames & C. C. Godfrey).

C. GRANULARIS Muhl. Stratford (Eames), Greenwich (Bissell & Weatherby). Southwestern extensions of range.

C. FLAVA L. Killingworth (G. H. Bartlett), North Branford (Harger), Greenwich (Bissell & Weatherby). Extensions of range to the east and south.

C. FLAVA L., var. RECTIROSTRA Gaudin. Margins of Blakeley's Pond, Norfolk (A. E. Blewitt), and Dog Pond, Goshen (Bissell & Weatherby). Not previously reported west of the Connecticut River. At Dog Pond it fruits notably later than the typical form, with which it grows.

C. DEBILIS, var. RUDGEI × VIRESCENS. Franklin (R. W. Woodward, RHODORA, xiii. 69).

C. DEBILIS Michx., var. INTERJECTA Bailey. Guilford (W. R. Dudley; specimen in Herb. Yale University). In the Catalogue reported only from Southington.

C. TRICHOCARPA Muhl. Middletown (Joseph Barratt, 1833; specimen in Herb. Wesleyan University), Southbury (Harger, RHODORA, xv. 66), Newtown (A. E. Blewitt), Oxford (Harger). Extensions of range to the east and south.

C. SQUARROSA L. Sharon (H. S. Clark), Greenwich (Eames & W. H. Hoyt). In the Catalogue not reported from Litchfield or Fairfield Counties.

C. TYPHINA Michx. Fairfield (Eames). Previously reported only from the central lowland.

* C. SUBULATA Michx. Sphagnous swamp in partial shade, Cromwell (Dr. E. J. Thompson, RHODORA, xiii. 78).

C. BULLATA Schkuhr, var. GREENEI (Boeckl.) Fernald. North Canaan (A. E. Blewitt). Previously known only from east of the Connecticut River.

ARISAEMA TRIPHYLLUM (L.) Schott. The form with the lateral leaflets lobed occurs at Cromwell (Dr. E. J. Thompson, RHODORA, xiii. 78), Oxford (Harger) and Salisbury (Weatherby).

The form described as var. *pusillum* Peck occurs at Middlefield and Windsor (Weatherby) and is occasional in the western part of the state.

The form described as *A. Stewardsonii* Britton occurs on shaded river-banks and in wet woods at South Windsor (C. W. Vibert), Watertown (Harger, Weatherby), Wilton (G. P. Ells), Salisbury (Weatherby).

* Eriocaulon Parkeri Robinson. Rare. Tidal flats of Mill River, New Haven and Hamden (Eames, 1899) and similar situations along the Housatonic River, Stratford (Eames). Previous to its recognition at these stations known only from the estuaries of the lower Delaware River and Chesapeake Bay. No admixture with *E. septangulare* has been observed, the latter appearing to be confined to freshwater shores beyond tidal influence.—E. H. Eames.

Xyris flexuosa Muhl. Change the statement of range in the Catalogue to read:— Occasional in New London Co. and on the sandplains of central Connecticut; rare elsewhere, reaching Union (Bissell), Killingworth (Harger et al.), Ellington (Harger).

X. Smalliana Nash. Voluntown (Graves), Haddam (W. R. Dudley; specimen in Herb. Yale University).

† Tradescantia reflexa Raf. Waste ground, Naugatuck (A. E. Blewitt, Rhodora, xiv. 163). Fugitive from the southwestern United States.

Pontederia cordata L., var. angustifolia Torr. East Lyme (Bissell), Groton (Harger), Suffield (Eames & C. C. Godfrey).

Juncus tenuis L., var. anthelatus Wiegand. Franklin (R. W. Woodward), New Fairfield (Harger). Occasional near the coast in southwestern Connecticut.

J. dichotomus Ell. Fairfield (Eames).

Juncus dichotomus Ell., var. platyphyllus Wiegand. Fairfield (Eames). Previously reported only from Groton.

* J. effusus L., var. conglomeratus Engelm. Gray Man. Ed. 5. 537 (1867). Rhodora, xii. 85. Rare. Sphagnous meadows: Voluntown (Bissell, Rhodora, xiii. 31), Franklin (R. W. Woodward, Rhodora, xii. 86).

* J. effusus L., var. decipiens Buchenau. Rare. Moist grassy roadside, Madison (Weatherby).

J. brachycephalus (Engelm.) Buchenau. In moist or dry calcareous soils southward in the Housatonic valley to New Milford and Sherman (Eames).

J. canadensis J. Gay, var. subcaudatus Engelm. Ledyard (Graves), Killingly (Bissell & Weatherby), Colebrook (M. L. Fernald). Eastern and western extensions of range.

* Uvularia grandiflora Smith. Rare. Low, rich woods, Salisbury (Mrs. J. R. Hubbard).

† Allium Schoenoprasum L. Chives. Rather freely spontaneous in waste ground near a garden, Middlebury (Harger). Fugitive from Europe.

Hosta japonica (Thunb.) Aschers. Bridgeport (Eames).

Hemerocallis flava L. Newtown and Danbury (Harger) and rare to occasional throughout southwestern Connecticut.

Lilium superbum L. Plainfield (Harger), Voluntown (Harger et. al.) and frequent southerly along the Quinebaug River.

Streptopus roseus Michx. Guilford (W. R. Dudley; specimen in Herb. Yale University). Extension of range southeastward.

* Dioscorea paniculata Michx., var. glabrifolia Bartlett. Bur. Pl. Industr. U. S. Dept. Agric. Bull. clxxxix. 17 (1910). "Middlesex Co." (S. B. Buckley, 1835), "New Haven Co." (Robbins). This variety, recently described as distinguishable from *D. paniculata* Michx. (*D. villosa* L.), differs only in having the leaves entirely glabrous.

† Gymnadenia conopsea R. Br. Litchfield (Miss Anna M. Vail, Bull. Torr. Bot. Club, xxxvii. 432). A single specimen in the Herbarium of the Torrey Botanical Club — the only known collection from North America. Miss Vail does not now remember just when nor where it was found. It may possibly have been introduced by some lover of flowers; and collectors should be on the lookout for it about Litchfield, that it may be, if possible, rediscovered and its status definitely made out.

Habenaria macrophylla Goldie. Colebrook (G. E. Nichols).

H. blephariglottis (Willd.) Torr. East Windsor (J. W. Robbins, 1825; specimen in Herb. Yale University), South Windsor, in great quantity in 1916 (C. W. Vibert), Suffield (Eames & C. C. Godfrey, C. W. Vibert).

Pogonia affinis Austin. Waterford (Miss Florence Griswold), Middletown (Miss G. H. Miner).

Spiranthes lucida (H. H. Eaton) Ames. Extends southward to Huntington on tidewater. (Eames) and Wilton (G. P. Ells).

S. Beckii × gracilis. Bridgeport (J. F. Moore. E. H. Eames, Rhodora, xviii. 239).

Epipactis repens (L.) Crantz, var. ophioides (Fernald) A. A. Eaton. Guilford (W. R. Dudley, 1904; specimen in Herb. Yale University). Not previously reported south of Southington.

E. TESSELATA (Lodd.) A. A. Eaton. Barkhamsted and Beacon Falls (A. E. Blewitt). The latter station a southward extension of range.

SALIX PENTANDRA L. Bridgeport (Eames), New Haven (A. E. Blewitt).

S. SERISSIMA (Bailey) Fernald. New Haven (J. A. Allen; specimen in Herb. Conn. Agr. Exp. Sta. RHODORA, xiv. 80). In the Catalogue reported only from the northwestern part of the state.

S. SUBSERICEA (Anders.) Schneider. Hartland (Bissell & Weatherby).

* S. ROSTRATA Richards., var. CAPREIFOLIA Fernald. RHODORA, xvi. 177 (1914). By a woodland path in rather wet ground, Barkhamsted (A. E. Blewitt).

* MYRICA GALE L., var. SUBGLABRA (Chevalier) Fernald. RHODORA, xvi. 167 (1914). This variety with the leaves glabrous or glabrate beneath is now known from Norwich (W. A. Setchell) and Salisbury (Weatherby), and probably occurs elsewhere.

BETULA LENTA L. A form which is somewhat intermediate between and possibly a hybrid of, this species and *B. lutea* has been described as *B. allegheniensis* Britton and is rare in the western part of the state (Eames).

† B. NIGRA L. Several young trees on reclaimed land at Bridgeport, where probably introduced (Eames).

QUERCUS MUHLENBERGII Engelm. Rocky hillside in Wilton (W. J. Comstock, G. P. Ells and H. W. Beers).

Q. RUBRA L., var. AMBIGUA (Michx.) Fernald. Oxford and Seymour (Harger), Cornwall (R. C. Benedict; specimen in Herb. N. Y. Bot. Gard.). Probably of wider distribution.

BROUSSONETIA PAPYRIFERA (L.) Vent. An additional station in Norwalk (Eames). Roadsides: Stamford and Greenwich (W. H. Hoyt).

RUMEX MEXICANUS Meisn. Old Lyme (Graves, A. E. Blewitt), Cheshire and Naugatuck (A. E. Blewitt), Salisbury (Mrs. C. S. Phelps, RHODORA, xvi. 96). Occasional in the southwestern part of the state (Eames).

R. ALTISSIMUS Wood. In the fresh green state the fruiting calyx commonly bears a uniformly large tubercle on each lobe; two of them shrinking but little more than the other until full maturity — a fact that has given cause for some confusion in field studies of this species. Occasional on banks and shores along tidewater of the Housatonic River (Eames).

Polygonum laphathifolium L., var. nodosum Meisn. Rare. Waste ground, Bridgeport (Eames).

P. acre, HBK., var. leptostachyum Meisn. Kent and New Milford (Eames). Frequent at Oxford (Harger).

* P. hydropiperoides Michx., var. strigosum Small. Rare. Border of Ponds: Voluntown (R. W. Woodward), Hartford (A. W. Driggs), Huntington (Harger).

P. dumetorum L. Reported from many stations and probably occasional in dry, rocky woods over much of the state.

Chenopodium glaucum L. Naugatuck (A. E. Blewitt), Danbury (Harger), North Canaan (M. L. Fernald), Salisbury (Eames & C. C. Godfrey). Occasional in southwestern Connecticut (Eames). Previously reported only from Bridgeport.

C. Boscianum Moq. Scotland and Salisbury (Weatherby).

C. leptophyllum Nutt. Haddam (C. M. Child; specimen in Herb. Wesleyan University). Waste ground, Waterbury (A. E. Blewitt).

† Spinacia oleracea Mill. Spinach. Rare in waste grounds: Stratford and Fairfield (Eames). Fugitive from Europe.

* Atriplex patula L., var. littoralis (L.) Gray. Sea-beaches: occasional in southeastern Connecticut (Graves), Fairfield (H. S. Clark), South Norwalk (Bissell), Greenwich (Eames & C. C. Godfrey). In the Catalogue included under typical *A. patula*.

Amaranthus spinosus L. Waterbury (A. E. Blewitt).

Acnida tuberculata Moq. Groton (Graves), Naugatuck (A. E. Blewitt), Bridgeport and Norwalk (Eames).

† Celosia cristata L. Rare in waste ground at Fairfield (Eames). Fugitive from the tropics.

Oxybaphus nyctagineus (Michx.) Sweet. Naugatuck and Waterbury (A. E. Blewitt). Well established in vacant lots at West Haven, Orange (Harger, Mrs. C. H. Lyman). Previously reported only from Granby.

O. hirsutus (Pursh) Sweet. Milford (Eames).

* Anychia polygonoides Raf. Rare. Grass-land, East Hartford (C. C. Hanmer). West Peak, Meriden (Miss Celia A. Shepard; specimen in Herb. Conn. Agr. Exp. Sta.).

* Spergularia canadensis (Pers.) G. Don. Groton (Bissell, Rhodora, xii. 162).

* S. salina J. & C. Presl. Groton (Bissell, l. c.).

S. leiosperma (Kindberg) F. Schmidt. Common in saline soil along

the coast. Discussion of this and the two preceding species will be found in Rhodora, xii. 157–162.

Sagina decumbens (Ell.) Torr. & Gray. Portland (A. E. Blewitt).

* Stellaria borealis Bigel., var. isophylla Fernald. Rhodora, xvi. 150 (1914). Cromwell and Winchester (Bissell), Guilford (G. H. Bartlett & Harger), Southington (Andrews), Oxford (Harger).

S. borealis Bigel., var. floribunda Fernald. Rhodora, xvi. 151 (1914). Orange (Weatherby), Oxford (Harger).

† S. graminea L., var. latifolia Peterm. East Hartford (Weatherby), Southington (Andrews), Salisbury (Bissell), Milford and Bridgeport (Eames). Introduced from Europe.

† S. aquatica L. Rare. Moist banks of the Housatonic River below highwater mark, sparingly at two stations (Harger). Fugitive or adventive from Europe.

* Silene antirrhina L., forma Deaneana Fernald. Rhodora, xvii. 96 (1915). Occasional in dry soil. Differs from the typical form in the entire absence of the glutinous band on the internodes.

† S. gallica L., var. quinquevulnera Koch. Rare. Cultivated fields, Southington (Andrews). Fugitive from Europe.

Gypsophila muralis L. Roadside, Chester (Graves).

Nuphar advena (Ait.) R. Br. Occasional in the coastal region of southwestern Connecticut (Eames).

N. variegatum Engelm. Common or occasional throughout. Recent studies have shown that the name *Nuphar advena* should be restricted to the larger plant having mostly emersed leaves with open sinus.

N. microphyllum (Pers.) Fernald. Rhodora, xix. 111 (1917). Guilford (W. R. Dudley; specimen in Herb. Yale University), Plymouth (H. J. Bassett, 1861), Stamford (Eames & C. C. Godfrey). In the Catalogue not reported from Fairfield Co.

Nymphaea tuberosa Paine. Rogers Pond, Old Lyme (Graves).

(*To be continued.*)

E. B. Harger,
C. B. Graves,
E. H. Eames,
C. H. Bissell,
L. Andrews,
C. A. Weatherby.

FURTHER NOTES ON THE ORCHIDS OF THE REGION OF ASQUAM LAKE.

JOHN B. MAY, M. D.

I was very much interested in Mr. Lowenstein's paper in a recent RHODORA, on the Orchids of the Asquam Lake Region. I have spent five summers in that region, one year as a councillor at Camp Algonquin, the last three as the Director of Camp Winnetaska, a girls' camp on Little Squam Lake. While my particular interest has been ornithological rather than botanical, I have kept a careful list of the Orchids found in the region, and therefore submit the following notes.

Cypripedium parviflorum, two colonies, about twenty-five plants.

Habenaria dilatata, abundant in at least one station; probably two hundred plants in swamp near Red Hill.

H. macrophylla, two plants at Camp Winnetaska, 1915.

H. blephariglottis, one station in 1903, since drained and cultivated.

Pogonia ophioglossoides, abundant in several swamps.

Arethusa bulbosa, abundant in one swamp near Red Hill, brought to me by Mrs. Frank Low of Worcester, Mass.

Liparis Loeselii; this I believe is an incorrect record. I found a small colony beside the Winnepesaukee River in Tilton, N. H., in 1913, while on a canoe trip with Algonquin boys. It was credited to the Algonquin list, but was well outside the Asquam Lake Region. I know of no other records.

Orchis spectabilis, a small colony near Little Squam in 1914. Seven plants flowered, 1916.

Microstylis unifolia, no records, 1913, 1914. Several, 1915, common, 1916. This I believe due to the peculiar weather conditions the last two summers, rather than more careful observation, as I was looking for this plant especially, in 1913.

I agree with Mr. Lowenstein's notes of the remaining species, all of which I have found with the exception of *Listera cordata.* The abundance of *Pogonia trianthophora* in 1916 is most unusual, I believe, the plants being very locally found, near Camp Algonquin.

COHASSET, MASSACHUSETTS.

Tiarella cordifolia L., forma **parviflora**, n. f., a forma typica recedit petalis 2–3 mm. longis lineari-lanceolatis vel anguste oblanceolatis; filamentis maturis 1.5–3 mm. longis.

Differing from the typical form in having the linear-lanceolate or narrowly oblanceolate petals 2–3 mm. long, and the mature filaments 1.5–3 mm. long.— Massachusetts: forming a large colony on the wooded bank of the Boston and Albany Railroad, east of the station, Becket, May 31, 1915, *M. L. Fernald*, no. 15,172 (type in Gray Herb.).

Very obvious in the field on account of its small flowers; typical *T. cordifolia* having the broader petals 4–6 mm. long and the mature filaments 4–7 mm. long. In all other respects the Becket colony of forma *parviflora* is like the abundant large-flowered plant of the region: the petals are entire and there is no indication that it belongs in the series of specimens which seem to be hybrids between *Mitella diphylla* and *Tiarella cordifolia*, in which the petals are usually toothed.[1] — M. L. Fernald, Gray Herbarium.

Some further Plants found on Woolwaste at Westford, Massachusetts.— During the past summer I have continued to note the unusual plants that have sprung up on land at Westford which has been fertilized with a dressing of woolwaste. Four, which were unfamiliar, have been found and taken to the Gray Herbarium, where they have been identified for me by Dr. Robinson, Dr. S. F. Blake, and Mr. J. F. Macbride. They have been as follows: *Sida spinosa* L. and *Erodium moschatum* (L.) L'Hér., both of which I am told are not infrequent as casual introductions in waste places and dumping grounds about cities. *Malvastrum coromandelianum* (L.) Garcke, generally known as *M. tricuspidatum* Gray, a plant of our southern states and occasionally found as a ballast weed in the middle Atlantic states, though not recorded north of New Jersey. And *Erodium Stephanianum* Willd., an Asiatic species, rather widely distributed from the Caucasus region to southern China, but not hitherto reported in America even as an introduction.— Emily F. Fletcher, Westford, Massachusetts.

[1] See Rhodora, viii. 91 (1906).

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